CLAIMS

What is claimed is:

1. A system for selecting a beam configuration for use in a communication link, said system comprising:

a speed estimator providing speed information with respect to a subscriber unit using corresponding array response vector information determined from a reverse link; and

a beam selector providing selection of a beam configuration for use in a communication link with respect to said subscriber unit from a plurality of beam configurations using said speed information.

2. The system of claim 1, further comprising:

a signal integrator providing said array response vector information.

3. The system of claim 2, wherein said array response vector information includes a plurality of array response vectors each of which represents

4 The system of claim 3, wherein said signal integrator integrates a unique pilot signal of said subscriber unit to provide an array response vector of said array response vector information.

5. The system of claim 3, wherein said signal integration circuitry integrates a uniquely coded signal of said subscriber unit to provide an array response vector of said array response vector information.

6. The system of claim 1, further comprising:

a beam configuration analyzer providing beam merit information for a plurality of beam configurations with respect to said subscriber unit, wherein said beam configuration analyzer uses said array response vector information in providing said beam merit information, wherein said beam merit information is weighted by said beam selector using said speed information for selection of said beam configuration

7. The system of claim 6, further comprising:

a decimator providing controlled decimation of said array response vector information prior to analysis by said beam configuration analyzer, wherein said decimation is controlled as a function of said speed information.

8. The system of claim 6, wherein said beam merit information comprises a correlation between a first beam formed value and a reference beam formed value, wherein said first beam formed value is determined using a relatively narrow beam configuration and a first array response vector of said array response vector information and said reference beam formed value is determined using reference beam configuration and said first array response vector.

9. The system of claim 8, wherein said reference beam configuration is a sector beam configuration.

10. The system of claim 1, wherein said speed estimator determines said speed information as a function of a fading estimate.

11. The system of claim 10, wherein said fading estimate is determined using a difference between a first array response vector of said array response vector information and a second array response vector of said array response vector information.

12. The system of claim 10, wherein said first array response vector and said second array response vector are associated with said subscriber unit at different points in time.

13. The system of claim 1, wherein said communication link comprises a forward link.

14. The system of claim 1, wherein said communication link comprises a reverse link.

15. A system for selecting an optimum wireless link beam configuration, said system comprising:

speed estimation circuitry providing speed information with respect to a subscriber unit, wherein said speed information is determined by said speed estimation circuitry using array response vector information of a signal from said subscriber unit as received by an antenna array;

beam analyzer circuitry providing beam merit information with respect to said subscriber unit for a plurality of beam configurations, wherein said beam merit information is determined by said beam analyzer circuitry using said array response vector information; and

beam mapping circuitry providing selection of an optimum beam with respect to said subscriber unit using said beam merit information and said speed information.

16. The system of claim 15, further comprising:

signal integration circuitry providing said array response vector information.

17. The system of claim 16, wherein said signal integration circuitry integrates a unique pilot signal of said subscriber unit to provide an array response vector of said array response vector information.

18. The system of claim 16, wherein said signal integration circuitry integrates a uniquely coded signal of said subscriber unit to provide an array response vector of said array response vector information.

19. The system of claim 15, wherein said speed information is derived from signal fading estimation.

20. The system of claim 19, wherein said speed estimation circuitry comprises:

differentiator circuitry determining difference information with respect to a first array response vector associated with said subscriber unit at a first time and a second array response vector associated with said subscriber unit at a second time, wherein said array response vector information includes said first array response vector and said second array response vector.

21. The system of claim 20, wherein said first time and said second time are separated by at least 5 array response vector sampling epochs.

22. The system of claim 21, wherein said sampling epochs are approximately 800ms.

23. The system of claim 15, wherein said speed estimation circuitry comprises:

an aging filter providing an estimation over time of speed estimation values.

24. The system of claim 15, wherein said speed estimation circuitry comprises:

a regressive coefficient multiplier providing correction of speed estimation values with respect to actual speed values.

25. The system of claim 15, further comprising:

array response vector decimation circuitry, wherein said array response vector information is decimated by said array response vector decimation circuitry prior to use by said beam analyzer circuitry.

26. The system of claim 25, wherein decimated array response vector information comprises array response vector information having a sub-sampling rate.

27. The system of claim 25, wherein a decimation rate of said array response vector decimation circuitry is selected as a function of said speed information.

28. The system of claim 15, wherein said beam analyzer circuitry comprises:

narrow beam forming circuitry providing a plurality of narrow beam formed outputs with respect to said array response vector information, said plurality of beam formed outputs corresponding to narrow beam configurations of said plurality of beam configurations having varying, relatively narrow, beam widths;

reference beam forming circuitry providing a reference beam formed output with respect to said array response vector information, said reference beam formed output corresponding to a reference beam configuration of said plurality of beam configurations having a reference beam width; and

beam correlation calculating circuitry providing correlation calculation for each said plurality of narrow beam formed outputs with respect to said reference beam formed output.

29. The system of claim 28, wherein said reference beam configuration corresponds to a sector beam.

30. The system of claim 28, wherein said correlation calculation comprises a particular narrow beam formed output multiplied with a conjugate of said reference beam formed output.

31. The system of claim 15, wherein said beam mapping circuitry includes weighting information associated with beam configurations of said plurality of beam configurations for weighting corresponding beam merit information for selection of said optimum beam.

32. The system of claim 31, wherein said weighting information is a function of speed, and wherein said speed information is used in selecting appropriate weighting information.

33. A method for selecting an optimum wireless link beam configuration, said method comprising:

estimating subscriber unit speed to thereby provide speed information, wherein said speed information is estimated using array response vector information of a signal from said subscriber unit as received by an antenna array;

analyzing a plurality of beam configurations with respect to said subscriber unit to thereby provide beam merit information, wherein said beam merit information is analyzed using said array response vector information; and

mapping said beam merit information to a selected optimum beam configuration as a function of said speed information.

34. The method of claim 33, further comprising:

integrating said signal from said subscriber unit to provide said array response vector information.

35. The method of claim 34, wherein said signal integrated comprises a unique pilot signal of said subscriber unit.

36. The method of claim 34, wherein said signal integrated comprises a uniquely coded signal of said subscriber unit.

estimating a fading rate associated with said subscriber unit.

37. The method of claim 33, wherein said estimating subscriber speed comprises:

estimating a fading rate associated with said subscriber unit.

38. The method of claim 37, wherein said estimating a fading rate comprises:

determining a difference between a first array response vector associated with said subscriber unit at a first time and a second array response vector associated with said subscriber unit at a second time, wherein said array response vector information includes said first array response vector and said second array response vector.

39. The method of claim 33, wherein said estimating subscriber speed comprises:

providing an estimation over time of speed estimation values.

40. The method of claim 33, further comprising:

decimating said array response vector information prior to said analyzing said plurality of beam configurations.

41. The method of claim 40, wherein said decimating comprises:

selecting a decimation rate as a function of said speed information.

42. The method of claim 33, wherein said analyzing said plurality of beam configurations comprises:

forming a plurality of narrow beam formed outputs with respect to said array response vector information, said plurality of beam formed outputs corresponding to narrow beam configurations of said plurality of beam configurations having varying, relatively narrow, beam widths;

forming a reference beam formed output with respect to said array response vector information, said reference beam formed output corresponding to a referenc

calculating a correlation between each said plurality of narrow beam formed outputs with respect to said reference beam formed output.

43. The method of claim 42, wherein said correlation calculation comprises a particular narrow beam formed output multiplied with a conjugate of said reference beam formed output.

44. A system for selecting an optimum wireless link beam configuration, said system comprising:

a signal integrator providing array response vector information with respect to a subscriber unit;

a speed estimator coupled to said signal integrator and providing speed information with respect to said subscriber unit using said array response vector information;

a beam configuration analyzer coupled to said signal integrator and providing beam merit information for a plurality of beam configurations with respect to said subscriber unit using said array response vector information; and

a beam configuration selector coupled to said speed estimator and said beam configuration analyzer providing selection of an optimum beam with respect to said subscriber unit using said speed information and said merit information

45. The system of claim 44, further comprising:

a decimator coupled between said signal integrator and said beam configuration analyzer, wherein said decimator decimates said array response vector information for use by said beam configuration analyzer, wherein a rate of decimation is a function of said speed information.